



## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

**RTID 0648-XC805**

#### **Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys in the New York Bight**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

**SUMMARY:** NMFS has received a request from Attentive Energy, LLC (AE) for authorization to take marine mammals incidental to marine site characterization surveys in coastal waters off of New York and New Jersey in the New York Bight, specifically within the Bureau of Ocean Energy Management (BOEM) Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (Lease) Area OCS-A 0538 and associated export cable route (ECR) area. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, one-year renewal that could be issued under certain circumstances and if all requirements are met, as described in **Request for Public Comments** at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorization and agency responses will be summarized in the final notice of our decision.

**DATES:** Comments and information must be received no later than [*insert date 30 days after date of publication in the FEDERAL REGISTER*].

**ADDRESSES:** Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service and should be submitted via email to *ITP.lock@noaa.gov*.

*Instructions:* NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period.

Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at *www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act* without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

**FOR FURTHER INFORMATION CONTACT:** Karolyn Lock, Office of Protected Resources, NMFS, (301) 427-8833. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable*. In case of problems accessing these documents, please call the contact listed above.

## **SUPPLEMENTARY INFORMATION:**

### **Background**

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical

region if certain findings are made and either regulations are proposed or, if the taking is limited to harassment, a notice of a proposed IHA is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

### **National Environmental Policy Act**

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

### **Summary of Request**

On December 28, 2022, NMFS received a request from AE for an IHA to take marine mammals incidental to conducting marine site characterization surveys in coastal waters off of New York and New Jersey in the New York Bight, specifically within the BOEM Lease Area OCS-A 0538 and associated ECR area. Following NMFS' review of the application, the application was deemed adequate and complete on February 22, 2023. AE's request is for take of small numbers of 15 species (16 stocks) of marine mammals by Level B harassment only. Neither AE nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

### **Description of Proposed Activity**

#### *Overview*

AE proposes to conduct marine site characterization surveys, including high-resolution geophysical (HRG) surveys, in coastal waters off of New Jersey and New York in the New York Bight, specifically within the BOEM Lease Area OCS-A 0538 and associated ECR area.

The planned marine site characterization surveys are designed to obtain data sufficient to meet BOEM guidelines for providing geophysical, geotechnical, and geohazard information for site assessment plan surveys and/or construction and operations plan development. The objective of the surveys is to support the site characterization, siting, and engineering design of offshore wind project facilities including wind turbine generators, offshore substations, and submarine cables within the Lease Area. Up to two vessels may conduct survey efforts concurrently. Underwater sound resulting from AE's marine site characterization survey activities, specifically

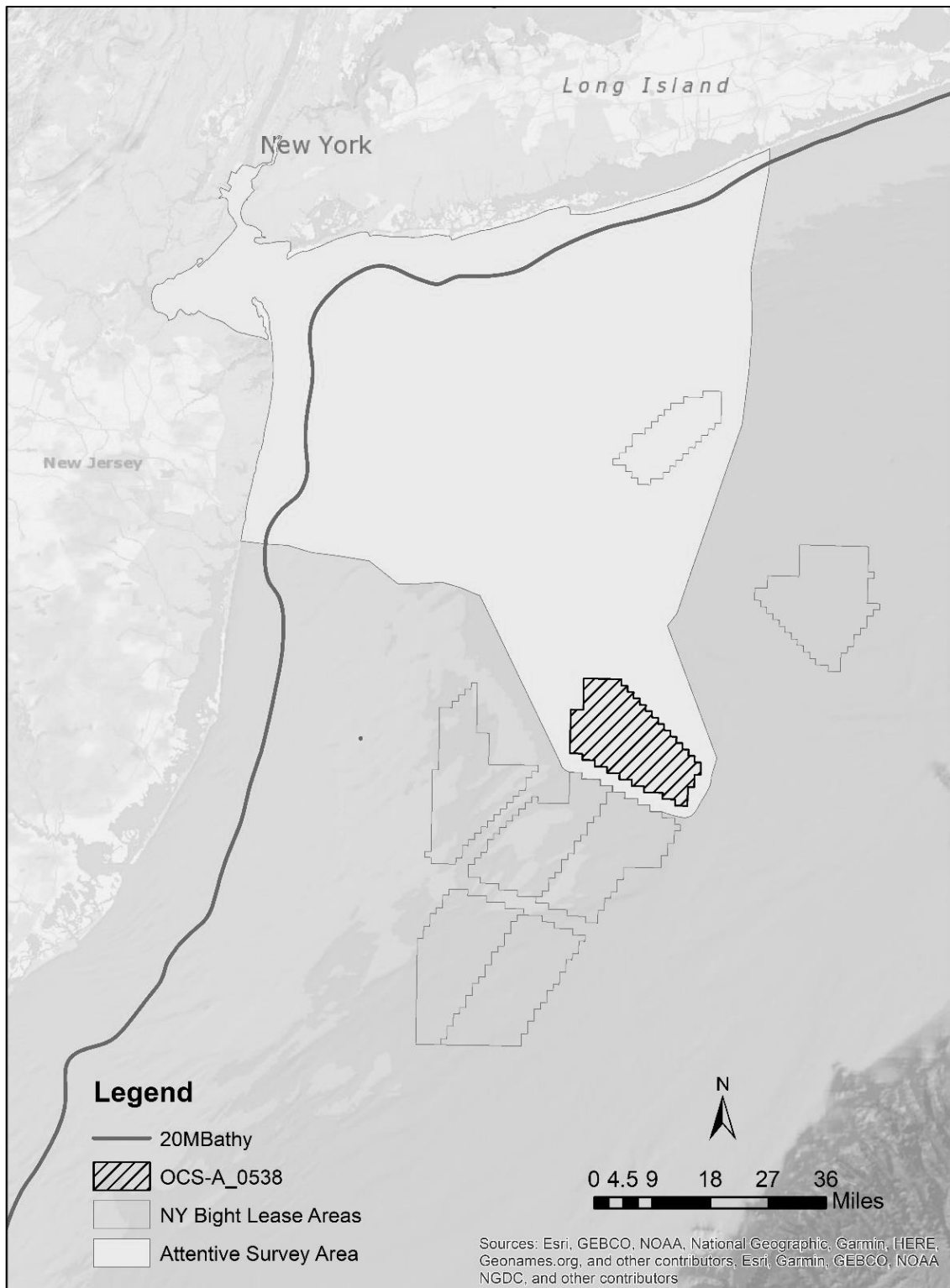
HRG surveys, have the potential to result in incidental take of marine mammals in the form of Level B harassment.

#### *Dates and Duration*

The proposed survey is planned to begin no earlier than May 1, 2023 and estimated to require 201 survey days across a maximum of two vessels operating concurrently within a single year. A “survey day” is defined as a 24-hour (hr) activity period in which active acoustic sound sources are used. It is expected that each vessel would cover approximately 170 kilometers (km) per day based on the applicant’s expectations regarding data acquisition efficiency, and there is up to 21,745 km (13,512 miles) of track line of survey effort planned; 14,025 km in the Lease Area and 7,720 km in the ECR Area. The IHA would be effective for 1 year from the date of issuance.

#### *Specific Geographic Region*

AE’s survey activities would occur in coastal waters off of New York and New Jersey in the New York Bight, specifically within Lease Area OCS-A 0538 and the associated ECR area (Figure 1). The Survey Area (*i.e.*, the Lease Area and ECR) is between 1 and 65 meters (m) in water depth. The Lease Area does not include water depths below 30 m, only portions of the ECR Area does (Figure 2).



**Figure 1 -- Proposed Survey Area**



**Figure 2 -- Proposed Survey Area with Bathymetric Contours Showing Water Depth**

### *Detailed Description of Specified Activity*

AE's marine site characterization surveys include HRG surveys and geotechnical sampling activities within the Lease Area and the ECR area. The total HRG survey tracklines for the Survey Area is 21,745 km, with 14,025 km in the Lease Area and 7,720 km in the ECR Area. The geotechnical sampling activities, including use of vibracores and seabed core penetration tests, would occur during the same period as the HRG survey activities and would use an additional survey vessel. NMFS does not expect geotechnical sampling activities to present reasonably anticipated risk of causing incidental take of marine mammals, and these activities are not discussed further in this notice.

AE proposes HRG survey operations to be conducted continuously 24 hours a day. Based on 24-hour operations, the estimated total duration of the activities would be approximately 201 survey days across a maximum of two concurrently-operating vessels. The survey days are proposed to occur any month throughout the year as the exact timing of the surveys during the year is not yet certain.

The only acoustic sources planned for use during HRG survey activities proposed by AE with expected potential to cause incidental take of marine mammals are the sparker and boomer. Sparkers and boomers are medium penetration, impulsive sources used to map deeper subsurface stratigraphy. Sparkers create omnidirectional acoustic pulses from 50 Hz to 4 kHz, are typically towed behind the vessel, and may be operated with different numbers of electrode tips to allow tuning of the acoustic waveform for specific applications. The sparker system planned for use is the Dual Geo-Spark 2000X (400 tip/800 J). A boomer is a broadband source operating in the 3.5 Hz to 10 kHz frequency range. The boomer system planned for use is the Geo-Boomer 300-500.

Crocker and Fratantonio (2016) did not provide data for the Dual Geo-Spark 2000X but did measure a similar system (Applied Acoustics Dura-Spark). However, measurements for the Applied Acoustics Dura-Spark did not provide data for an energy



setting near 800 J (for a 400-tip configuration, Crocker and Fratantonio (2016) provide measurements at 500 and 2,000 J). Therefore, AE proposes to use this sparker as proxy, at 500 J setting, as it is the closest match to the Dual Geo-Spark 2000X because of the similarities in composition and operation, with both employing up to 400-electrode tips. Similarly, no data are provided by Crocker and Fratantonio (2016) for the Geo-Boomer 300-500. However, a similar system (the Applied Acoustics S-Boom) is included in Crocker and Fratantonio (2016) and values were included for a dual plate, 500 J setting. Therefore, AE proposes to use this boomer as proxy as it is the closest match to the Geo-Boomer 300-500 because of the similarities in composition and operation, with input signal at a similar or higher energy range (100-700). NMFS concurs with these selections, which are described in Table 1.

The only acoustic sources planned for use during HRG survey activities proposed by the applicant with expected potential to cause incidental take of marine mammals are the boomer and sparker. Therefore, we will only be discussing further equipment that has the potential to harass marine mammals and is listed below in Table 1. For equipment source level specifications noted in Table 1, proxies representing the closest match in composition and operation of the Dual Geo-Spark 2000X (sarker) and Geo-Boomer 300-500 (boomer) were used from Crocker and Fratantonio (2016).

AE's surveys will likely use a combination of the boomer and sparker. However, AE has requested authorization of take based on an assumption that the sparker would be used during all survey effort as it produces a greater distance to the 160 dB root mean square (rms) threshold for acoustic impacts (see application's Table 1-3 and Section 6.1).

**Table 1 -- Representative Survey Equipment Expected to Result in Take of Marine Mammals**

Equipment Type	Proxy Equipment Make/ Model	Operating Frequency (kHz)	Source Level (RMS dB re 1 uPa @ 1m)	Source Level (Peak dB re 1 uPa @ 1m)	Sound Exposure Level (dB re 1 uPa <sup>2</sup> *s)	Reference	Pulse Duration (ms)	Repetition Rate (Hz)	Beam Width (degrees)
Medium SBP-Boomer	Applied Acoustics S-Boom 500J (boomer)	5.5	202	213	170	Crocker and Fratantonio 2016	0.70	1.4	76
Medium SBP-Sparker	Applied Acoustics Dura-spark (400 tip/500 to 2,000 J) (sparker)	0.3-1.2	203	211	174	Crocker and Fratantonio 2016	1.1	4	180

Operation of the following additional survey equipment types is not reasonably expected to result in take of marine mammals and will not be discussed further beyond the brief summaries provided below.

- Non-impulsive, parametric sub-bottom profilers (SBPs) are used for providing high data density in sub-bottom profiles that are typically required for cable routes, very shallow water, and archaeological surveys. These sources generate short, very narrow-beam (1° to 3.5°) signals at high frequencies (generally around 85-115 kHz). The narrow beamwidth significantly reduces the potential that a marine mammal could be exposed to the signal, while the high frequency of operation means that the signal is rapidly attenuated in seawater (and cannot be heard by mysticetes). These sources are typically deployed on a pole rather than towed behind the vessel.

- Magnetic intensity measurements (gradiometer) are used for detecting local variations in regional magnetic field from geological strata and potential ferrous objects on and below the bottom. The proposed gradiometer has operating frequencies greater than 180 kHz and is therefore outside the general hearing range of marine mammals.

- Multibeam echosounders (MBESs) are used to determine water depths and general bottom topography. The proposed MBESs all have operating frequencies greater than 180 kHz and are therefore outside the general hearing range of marine mammals.

- Side scan sonars (SSS) are used for seabed sediment classification purposes and to identify natural and manmade acoustic targets on the seafloor. The proposed SSSs all have operating frequencies greater than 180 kHz and are therefore outside the general hearing range of marine mammals.

Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Proposed Mitigation** and **Proposed Monitoring and Reporting**).

### **Description of Marine Mammals in the Area of Specified Activities**

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history of the potentially affected species. NMFS fully considered all of this information, and we refer the reader to these descriptions, incorporated here by reference, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs;

*[www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments)*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS' website (*<https://www.fisheries.noaa.gov/find-species>*).

Table 2 lists all species or stocks for which take is expected and proposed to be authorized for this activity and summarizes information related to the species or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed

from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no serious injury or mortality is anticipated or proposed to be authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species or stocks and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All MMPA managed stocks in this region are assessed in NMFS' U.S. Atlantic and Gulf of Mexico SARs. All values presented in Table 2 are the most recent available at the time of publication (draft 2022 SARs) and are available online at:

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>).

**Table 2 -- Species and Stocks Likely Impacted by the Specified Activities**

Common Name	Scientific Name	Stock	ESA/MMP A status; strategic (Y/N) <sup>1</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>2</sup>	PBR	Annual M/SI <sup>3</sup>
<i>Order Artiodactyla—Infraorder Cetacea—Mysticeti (baleen whales)</i>						
North Atlantic right whale	<i>Eubalaena glacialis</i>	Western Atlantic Stock	E/D, Y	338 (0; 332; 2020)	0.7	8.1
Humpback whale	<i>Megaptera novaeangliae</i>	Gulf of Maine	-/-; Y	1,396 (0; 1,380; 2016)	22	12.15
Fin whale	<i>Balaenoptera physalus</i>	Western North Atlantic Stock	E/D, Y	6,802 (0.24; 5,573; 2016)	11	1.8

Common Name	Scientific Name	Stock	ESA/MMP A status; strategic (Y/N) <sup>1</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>2</sup>	PBR	Annual M/SI <sup>3</sup>
Sei whale	<i>Balaenoptera borealis</i>	Nova Scotia Stock	E/D, Y	6,292 (1.02; 3,098; 2016)	6.2	0.8
Minke whale	<i>Balaenoptera acutorostrata</i>	Canadian East Coastal Stock	-/-, N	21,968 (0.31; 17,002; 2016)	170	10.6
<i>Odontoceti (toothed whales, dolphins, and porpoises)</i>						
Sperm whale	<i>Physeter macrocephalus</i>	North Atlantic Stock	E/D, Y	4,349 (0.28; 3,451; 2016)	3.9	0
Long-finned pilot whale	<i>Globicephala melas</i>	Western North Atlantic Stock	-/-, N	39,215 (0.3; 30,627; 2016)	306	9
Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>	Western North Atlantic Stock	-/-, N	93,233 (0.71; 54,443; 2016)	544	27
Bottlenose dolphin	<i>Tursiops truncatus</i>	Western North Atlantic Offshore Stock	-/-, N	62,851 (0.23; 51,914; 2016)	519	28
Bottlenose dolphin	<i>Tursiops truncatus</i>	Northern Migratory Coastal	-/D, Y	6,639 (0.41; 4,759; 2016)	48	12.2-21.5
Common dolphin	<i>Delphinus delphis</i>	Western North Atlantic Stock	-/-, N	172,974 (0.21, 145,216, 2016)	1,452	390
Atlantic spotted dolphin	<i>Stenella frontalis</i>	Western North Atlantic Stock	-/-, N	39,921 (0.27; 32,032; 2016)	320	0
Risso's dolphin	<i>Grampus griseus</i>	Western North Atlantic Stock	-/-, N	35,215 (0.19; 30,051; 2016)	301	34

Common Name	Scientific Name	Stock	ESA/MMP A status; strategic (Y/N) <sup>1</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>2</sup>	PBR	Annual M/SI <sup>3</sup>
Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy Stock	-/-, N	95,543 (0.31; 74,034; 2016)	851	164
<i>Order Carnivora—Pinnipedia</i>						
Harbor seal	<i>Phoca vitulina</i>	Western North Atlantic Stock	-/-, N	61,336 (0.08; 57,637; 2018)	1,729	339
Gray seal <sup>4</sup>	<i>Halichoerus grypus</i>	Western North Atlantic Stock	-/-, N	27,300 (0.22; 22,785; 2016)	1,458	4,453

<sup>1</sup> - ESA status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

<sup>2</sup> - NMFS marine mammal stock assessment reports online at: [www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments](http://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments). CV is the coefficient of variation; N<sub>min</sub> is the minimum estimate of stock abundance. In some cases, CV is not applicable.

<sup>3</sup> - These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike).

<sup>4</sup> - NMFS' stock abundance estimate (and associated PBR value) applies to the U.S. population only. Total stock abundance (including animals in Canada) is approximately 451,600. The annual mortality and serious injury (M/SI) value given is for the total stock.

As indicated above, all 15 species (16 stocks) in Table 2 temporally and spatially co-occur with the proposed activity to the degree that take is reasonably likely to occur.

While other species have been documented in the area (see application Section 3-Table

1), the temporal and/or spatial occurrence of these species is such that take is not

expected to occur and they are not discussed further beyond the explanation provided here.

*North Atlantic Right Whale*

North Atlantic right whales (NARW) range from calving grounds in the southeastern United States to feeding grounds in New England waters and into Canadian waters (Hayes *et al.*, 2018). They are observed year round in the Mid-Atlantic Bight, and surveys have demonstrated the existence of seven areas where NARWs congregate seasonally in Georges Bank, off Cape Cod, and in Massachusetts Bay (Hayes *et al.*, 2018). In the late fall months (*e.g.*, October), NARWs are generally thought to depart from the feeding grounds in the North Atlantic and move south to their calving grounds off Georgia and Florida. However, recent research indicates our understanding of their movement patterns remains incomplete (Davis *et al.*, 2017). A review of passive acoustic monitoring data from 2004 to 2014 throughout the western North Atlantic demonstrated nearly continuous year-round NARW presence across their entire habitat range (for at least some individuals), including in locations previously thought of as migratory corridors, suggesting that not all of the population undergoes a consistent annual migration (Davis *et al.*, 2017). Given that AE's surveys would be concentrated offshore in the New York Bight, some NARWs may be present year round. However, the majority of NARWs in the vicinity of the survey areas are likely to be transient, migrating through the area.

Recent aerial surveys in the New York Bight showed NARW in the proposed survey area in the winter and spring, preferring deeper waters near the shelf break (NARW observed in depths ranging from 33 – 1041m) but were observed throughout the survey area (Normandeau Associates and Association of Professional Energy Managers (APEM), 2020; Zoidis *et al.*, 2021). Similarly, passive acoustic data collected from 2018 to 2020 in the New York Bight showed detections of NARW throughout the year (Estabrook *et al.*, 2021). Seasonally, NARW acoustic presence was highest in the fall. NARW can be anticipated to occur in the proposed survey area year-round but with lower levels in the summer from July – September.

Since 2010, the NARW population has been in decline (Pace *et al.*, 2017), with a 40 percent decrease in calving rate (Kraus *et al.*, 2016). In 2018, no new NARW calves were documented in their calving grounds; this represented the first time since annual NOAA aerial surveys began in 1989 that no new NARW calves were observed. Calf numbers have increased since 2018 with 20 NARW calves documented in 2021 and 15 in 2022.

Elevated NARW mortalities have occurred since June 7, 2017, along the U.S. and Canadian coast. This event has been declared an Unusual Mortality Event (UME), with human interactions, including entanglement in fixed fishing gear and vessel strikes, implicated in at least 60 of the mortalities or serious injuries thus far. As of April 4, 2023, a total of 98 confirmed cases of mortality, serious injury, or morbidity (sublethal injury or illness) have been documented. The preliminary cause of most of these cases is from rope entanglements or vessel strikes. More information is available online at:

<https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2023-north-atlantic-right-whale-unusual-mortality-event>.

The proposed survey area is within a migratory corridor Biologically Important Area (BIA) for NARWs that extends from Massachusetts to Florida (LeBrecque *et al.*, 2015). There is possible migratory behavior that could occur in this area between November and April. Off the coast of New Jersey, the migratory BIA extends from the coast to beyond the shelf break.

NMFS' regulations at 50 CFR part 224.105 designated nearshore waters of the Mid-Atlantic Bight as Mid-Atlantic U.S. Seasonal Management Areas (SMA) for NARWs in 2008. SMAs were developed to reduce the threat of collisions between ships and NARWs around their migratory route and calving grounds. The New York/New Jersey SMA, which occurs in the New York Bight, is in the proposed survey area and is active from November 1 through April 30 of each year. Within SMAs, the regulations



require a mandatory vessel speed (less than 10 knots (kn) or 5.14 meters-per-second (m/s)) for all vessels greater than 65 ft (19.8 m).

On August 1, 2022, NMFS announced proposed changes to the existing NARW vessel speed regulations to further reduce the likelihood of mortalities and serious injuries to endangered NARWs from vessel collisions, which are a leading cause of the species' decline and a primary factor in an ongoing Unusual Mortality Event (87 FR 46921). Should a final vessel speed rule be issued and become effective during the effective period of this IHA (or any other MMPA incidental take authorization), the authorization holder would be required to comply with any and all applicable requirements contained within the final rule. Specifically, where measures in any final vessel speed rule are more protective or restrictive than those in this or any other MMPA authorization, authorization holders would be required to comply with the requirements of the rule. Alternatively, where measures in this or any other MMPA authorization are more restrictive or protective than those in any final vessel speed rule, the measures in the MMPA authorization would remain in place. The responsibility to comply with the applicable requirements of any vessel speed rule would become effective immediately upon the effective date of any final vessel speed rule and, when notice is published of the effective date, NMFS would also notify AE if the measures in the speed rule were to supersede any of the measures in the MMPA authorization such that they were no longer applicable.

### *Humpback Whale*

On September 8, 2016, NMFS divided the once single species of humpback whales into 14 distinct population segments (DPS),<sup>1</sup> removed the current species-level

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<sup>1</sup> Under the Endangered Species Act, in 16 U.S.C. 1532(16), a distinct population segment (or DPS) is a vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. NOAA Fisheries and the US Fish and Wildlife Service released a joint statement on February 7, 1996 (61 FR 4722) that defines the criteria for identifying a population as a DPS.

listing, and, instead, listed four DPSs as endangered and one DPS as threatened (81 FR 62259, September 8, 2016). The remaining nine DPSs were not listed. The West Indies DPS, which is not listed under the ESA, is the only DPS of humpback whale that is expected to occur in the survey area. Members of the West Indies DPS disperse to multiple western North Atlantic feeding populations, including the Gulf of Maine stock designated under the MMPA. Whales occurring in the project area are considered to be from the West Indies DPS but are not necessarily from the Gulf of Maine stock. Barco *et al.* (2002) estimated that, based on photo-identification, only 39 percent of individual humpback whales observed along the mid- and south Atlantic U.S. coast are from the Gulf of Maine stock. Bettridge *et al.* (2015) estimated the size of this population at 12,312 (95 percent CI 8,688-15,954) whales in 2004-05, which is consistent with previous population estimates of approximately 10,000-11,000 whales (Stevick *et al.*, 2003; Smith *et al.*, 1999) and the increasing trend for the West Indies DPS (Bettridge *et al.*, 2015).

Humpback whales utilize the mid-Atlantic as a migration pathway between calving/mating grounds to the south and feeding grounds in the north (Waring *et al.*, 2007a; Waring *et al.*, 2007b). A key question with regard to humpback whales off the Mid-Atlantic states is what feeding population whales in these waters belong to.

Since January 2016, elevated humpback whale mortalities have occurred along the Atlantic coast from Maine to Florida. Partial or full necropsy examinations have been conducted on approximately half of the 191 known cases (as of April 4, 2023). Of the whales examined, about 40 percent had evidence of human interaction, either ship strike or entanglement. While a portion of the whales have shown evidence of pre-mortem vessel strike, this finding is not consistent across all whales examined and more research is needed. NOAA is consulting with researchers that are conducting studies on the humpback whale populations, and these efforts may provide information on changes in

whale distribution and habitat use that could provide additional insight into how these vessel interactions occurred. More information is available at:

<https://www.fisheries.noaa.gov/national/marine-life-distress/2016-2023-humpback-whale-unusual-mortality-event-along-atlantic-coast>

### *Fin Whale*

Fin whales are present north of 35-degree latitude in every season and are broadly distributed throughout the western North Atlantic for most of the year (Waring *et al.*, 2016). They are typically found in small groups of up to five individuals (Brueggeman *et al.*, 1987). The main threats to fin whales are fishery interactions and vessel collisions (Waring *et al.*, 2016).

The western north Atlantic stock of fin whales includes the area from Central Virginia to Newfoundland/Labrador Canada. This region is primarily a feeding ground for this migratory species that tend to calve and breed in lower latitudes or offshore. There is currently no critical habitat designated for this species.

Aerial surveys in the New York Bight observed fin whales year-round throughout the survey area, but they preferred deeper waters near the shelf break (Normandeau Associates and APEM, 2020). Passive acoustic data from 2018 to 2020 also detected fin whales throughout the year (Estabrook *et al.*, 2021).

### *Sei Whale*

The Nova Scotia stock of sei whales can be found in deeper waters of the continental shelf edge waters of the northeastern U.S. and northeastward to south of Newfoundland. Sei whales occur in shallower waters to feed. Currently there is no critical habitat for sei whales, though they can be observed along the shelf edge of the continental shelf. The main threats to this stock are interactions with fisheries and vessel collisions.

Aerial surveys conducted in the New York Bight observed sei whales in both winter and spring, though they preferred deeper waters near the shelf break (Normandeau Associates and APEM, 2020). Passive acoustic data in the survey area detected sei whales throughout the year except January and July with highest detections in March and April (Estabrook *et al.*, 2021).

### *Minke Whale*

Minke whales can be found in temperate, tropical, and high-latitude waters. The Canadian East Coast stock can be found in the area from the western half of the Davis Strait (45°W) to the Gulf of Mexico (Waring *et al.*, 2016). This species generally occupies waters less than 100-m deep on the continental shelf. There appears to be a strong seasonal component to minke whale distribution in the survey areas, in which spring to fall are times of relatively widespread and common occurrence while during winter the species appears to be largely absent (Waring *et al.*, 2016). Aerial surveys in the New York Bight area found that minke whales were observed throughout the survey area with highest numbers sighting in the spring months (Normandeau Associates and APEM, 2020).

Since January 2017, elevated minke whale mortalities have occurred along the Atlantic coast from Maine through South Carolina, with a total of 142 strandings (as of March 23, 2023). This event has been declared a UME; as of 2023, it is pending closure. Full or partial necropsy examinations were conducted on more than 60 percent of the stranded whales. Preliminary findings in several of the whales have shown evidence of human interactions or infectious disease, but these findings are not consistent across all of the whales examined, so more research is needed. More information is available at: <https://www.fisheries.noaa.gov/national/marine-life-distress/2017-2023-minke-whale-unusual-mortality-event-along-atlantic-coast>

### *Sperm Whale*

The distribution of the sperm whale in the U.S. EEZ occurs on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring *et al.*, 2014). They are rarely found in waters less than 300 m deep. The basic social unit of the sperm whale appears to be the mixed school of adult females, their calves, and some juveniles of both sexes, normally numbering 20-40 animals. There is evidence that some social bonds persist for many years (Christal *et al.*, 1998). In summer, the distribution of sperm whales includes the area northeast of Georges Bank and into the Northeast Channel region, as well as the continental shelf (inshore of the 100-m isobath) south of New England. In the fall, sperm whales occur south of New England on the continental shelf at its highest level. In winter, sperm whales are concentrated east and northeast of Cape Hatteras, North Carolina.

Aerial studies in the New York Bight observed sperm whales in the highest number in the summer, with a preference for the shelf break (Normandeau Associates and APEM, 2020). Passive acoustic recordings of sperm whale recorded them throughout the year, and again highest during spring and summer (Estabrook *et al.*, 2021).

#### *Risso's Dolphin*

The Western North Atlantic stock of Risso's dolphin occurs from Florida to eastern Newfoundland. They are common on the northwest Atlantic continental shelf in summer and fall with lower abundances in winter and spring. Aerial surveys in the New York Bight area sighted Risso's dolphins throughout the year at the shelf break with highest abundances in spring and summer (Normandeau Associates and APEM, 2020).

#### *Long-finned Pilot Whale*

For pilot whales, only long-finned pilot whales are expected to occur in this project area due to their more northerly distribution and tolerance of shallower, colder shelf waters (Hayes *et al.*, 2022). Long-finned pilot whales are found from North Carolina to Iceland, Greenland, and the Barents Sea (Waring *et al.*, 2016). In U.S.

Atlantic waters, the Western North Atlantic stock is distributed principally along the continental shelf edge off the northeastern U.S. coast in winter and early spring. In late spring, pilot whales move onto Georges Bank and into the Gulf of Maine and more northern waters and remain in these areas through late autumn (Waring *et al.*, 2016). Additionally, aerial surveys conducted in the New York Bight noted a preference for deeper water at the shelf break throughout the year (Normandeau Associates and APEM, 2020).

#### *Atlantic White-sided Dolphin*

White-sided dolphins are found in temperate and sub-polar waters of the North Atlantic, primarily in continental shelf waters to the 100m depth contour from central West Greenland to North Carolina (Waring *et al.*, 2016). The Gulf of Maine stock is most common in continental shelf waters from Hudson Canyon to Georges Bank and in the Gulf of Maine and lower Bay of Fundy. Sighting data indicate seasonal shifts in distribution (Northridge *et al.*, 1997). During January to May, low numbers of white-sided dolphins are found from Georges Bank to Jeffreys Ledge (off New Hampshire) with even lower numbers south of Georges Bank as documented by a few strandings collected on beaches of Virginia to South Carolina. From June through September, large numbers of white-sided dolphins are found from Georges Bank to the lower Bay of Fundy. From October to December, white-sided dolphins occur at intermediate densities from southern Georges Bank to southern Gulf of Maine (Payne and Heinemann, 1990). Sightings south of Georges Bank, particularly around Hudson Canyon, occur year round but at low densities. Aerial studies confirmed observations in fall and winter in the New York Bight area with preference for deep water at the shelf break throughout the year (Normandeau Associates and APEM, 2020).

#### *Atlantic Spotted Dolphin*

Atlantic spotted dolphins are found in tropical and warm temperate waters ranging from southern New England, south to the Gulf of Mexico and the Caribbean to Venezuela (Waring *et al.*, 2014). The Western North Atlantic stock regularly occur in continental shelf waters south of Cape Hatteras, North Carolina and in continental shelf edge and continental slope waters north of this region (Waring *et al.*, 2014).

### *Common Dolphin*

Common dolphins within the U.S. Atlantic EEZ belong to the Western North Atlantic stock, generally occurring from Cape Hatteras to the Scotian Shelf (Hayes *et al.*, 2021). Common dolphins are a highly seasonal, migratory species. Within the U.S. Atlantic EEZ, this species is distributed along the continental shelf and typically associated with Gulf Stream features (CETAP, 1982; Selzer and Payne, 1988; Hamazaki, 2002; Hayes *et al.*, 2021). They are commonly found over the continental shelf between the 100 m and 2,000 m isobaths and over prominent underwater topography and east to the mid-Atlantic Ridge (Waring *et al.*, 2016). Common dolphins occur from Cape Hatteras northeast to Georges Bank (35° to 42° N) during mid-January to May and move as far north as the Scotian Shelf from mid-summer to fall (Selzer and Payne, 1988). Migration onto the Scotian Shelf and continental shelf off Newfoundland occurs when water temperatures exceed 51.8 ° Fahrenheit (11° Celsius) (Sergeant *et al.*, 1970; Gowans and Whitehead, 1995). Breeding usually takes place between June and September (Hayes *et al.*, 2019). Kraus *et al.* (2016) observed 3,896 individual common dolphins within the Rhode Island/Massachusetts Wind Energy Area (RI-MA WEA). Summer surveys included observations of the most individuals followed by fall, winter, then spring.

### *Bottlenose Dolphin*

There are two distinct bottlenose dolphin morphotypes in the Western North Atlantic: Western North Atlantic Northern Migratory Coastal Stock (coastal stock) and the Western North Atlantic Offshore Stock (offshore stock) (Waring *et al.*, 2016). The

coastal stock resides in waters typically less than 20 m deep, along the inner continental shelf (within 7.5 km (4.6 miles) of shore), around islands, and is continuously distributed south of Long Island, New York into the Gulf of Mexico. Torres *et al.* (2003) found a statistically significant break in the distribution of the ecotypes at 34 km from shore based upon the genetic analysis of tissue samples collected in nearshore and offshore waters from New York to central Florida. The offshore stock was found exclusively seaward of 34 km and in waters deeper than 34 m.

The offshore stock is distributed primarily along the outer continental shelf and continental slope in the Northwest Atlantic Ocean from Georges Bank to the Florida Keys (Waring *et al.*, 2017; Hayes *et al.*, 2018). Both stocks of bottlenose dolphins are likely to occur in the proposed survey area. These two stocks are considered geographically separated by the 20 m depth contour with the Coastal Stock found in waters less than 20 m and the Offshore Stock in waters greater than 20 m.

#### *Harbor Porpoise*

In the project area, only the Gulf of Maine/Bay of Fundy stock of harbor porpoises may be present in the fall and winter. This stock is found in U.S. and Canadian Atlantic waters and is concentrated in the northern Gulf of Maine and southern Bay of Fundy region, generally in waters less than 150-m deep (Waring *et al.*, 2016). During fall (October to December) and spring (April to June), they are more widely dispersed from New Jersey to Maine with lower densities farther north and south. In winter (January to March), intermediate densities of harbor porpoises can be found in waters off New Jersey to North Carolina with lower densities found in waters off New York to New Brunswick, Canada (Hayes *et al.*, 2020). They are seen from the coastline to deep waters (>1,800-m; Westgate *et al.*, 1998), although the majority of the population is found over the continental shelf (Waring *et al.*, 2016). The main threat to the species is interactions with fisheries, with documented take in the U.S. northeast sink gillnet, mid-Atlantic gillnet,



and northeast bottom trawl fisheries and in the Canadian herring weir fisheries (Waring *et al.*, 2016).

#### *Pinnipeds (Harbor Seal and Gray Seal)*

Gray seals are regularly observed in the survey area and these seals belong to the western North Atlantic stock. The range for this stock is thought to be from New Jersey to Labrador Sea. This species inhabits temperate and sub-arctic waters and lives on remote, exposed islands, shoals, and sandbars (Jefferson *et al.*, 2008). Current population trends show that gray seal abundance is likely increasing in the U.S. Atlantic EEZ (Waring *et al.*, 2016). Although the rate of increase is unknown, surveys conducted since their arrival in the 1980s indicate a steady increase in abundance in both Maine and Massachusetts (Waring *et al.*, 2016). It is believed that recolonization by Canadian gray seals is the source of the U.S. population increase (Waring *et al.*, 2016). Documented haulouts for gray seals exist in the Long Island area, with a possible rookery on Little Gull Island.

Since June 2022, elevated numbers of sick and dead harbor seal and gray seal have been documented along the southern and central coast of Maine. This event has also been declared an UME. Preliminary testing of samples found that some harbor and gray seals were positive for the highly pathogenic avian influenza. NMFS and other partners are working on an ongoing investigation of this UME. From June 1, 2022 – February 19, 2023 there have been 337 seal strandings. Information on these UME's are available online at: <https://www.fisheries.noaa.gov/2022-2023-pinniped-unusual-mortality-event-along-maine-coast>

#### *Marine Mammal Hearing*

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the

frequency ranges marine mammals are able to hear. Not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, *etc.*). Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

**Table 3 -- Marine Mammal Hearing Groups (NMFS, 2018)**

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, <i>Kogia</i> , river dolphins, Cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i> )	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz
* Represents the generalized hearing range for the entire group as a composite ( <i>i.e.</i> , all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall <i>et al.</i> , 2007) and PW pinniped (approximation).	

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an

extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.*, 2006; Kastelein *et al.*, 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information.

### **Potential Effects of Specified Activities on Marine Mammals and their Habitat**

This section provides a discussion of the ways in which components of the specified activity may impact marine mammals and their habitat. Detailed descriptions of the potential effects of similar specified activities have been provided in other recent **Federal Register** notices, including for survey activities using the same methodology, over a similar amount of time, and occurring in the mid-Atlantic region, including the New York Bight (*e.g.*, 87 FR 24103, April 22, 2022; 87 FR 50293, August 16, 2022; 87 FR 51359, August 22, 2022). No significant new information is available, and we reference the detailed discussions in those documents rather than repeating the details here.

The **Estimated Take** section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The **Negligible Impact Analysis and Determination** section considers the content of this section, the **Estimated Take** section, and the **Proposed Mitigation** section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and whether those impacts are reasonably expected to, or reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.

### *Summary on Specific Potential Effects of Acoustic Sound Sources*

For general information on sound, its interaction with the marine environment, and a description of acoustic terminology, please see ANSI (1986, 1995), Au and Hastings (2008), Hastings and Popper (2005), Mitson (1995), NIOSH (1998), Richardson

*et al.* (1995), Southall *et al.* (2007), and Urick (1983). Underwater sound from active acoustic sources can cause one or more of the following: temporary or permanent hearing impairment, behavioral disturbance, masking, stress, and non-auditory physical effects. The degree of effect is intrinsically related to the signal characteristics, received level, distance from the source, and duration of the sound exposure. Marine mammals exposed to high-intensity sound, or to lower-intensity sound for prolonged periods, can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Finneran, 2015). TS can be permanent (PTS; permanent threshold shift), in which case the loss of hearing sensitivity is not fully recoverable, or temporary (TTS; temporary threshold shift), in which case the animal's hearing threshold would recover over time (Southall *et al.*, 2007).

When PTS occurs, there is physical damage to the sound receptors in the ear (*i.e.*, tissue damage), whereas TTS represents primarily tissue fatigue and is reversible (Southall *et al.*, 2007). In addition, other investigators have suggested that TTS is within the normal bounds of physiological variability and tolerance and does not represent physical injury (*e.g.*, Ward, 1997). Therefore, NMFS does not consider TTS to constitute auditory injury.

Animals in the vicinity of AE's proposed HRG survey activities are unlikely to incur even TTS due to the characteristics of the sound sources, which include generally very short pulses and potential duration of exposure. These characteristics mean that instantaneous exposure is unlikely to cause TTS because it is unlikely that exposure would occur close enough to the vessel for received levels to exceed peak pressure TTS criteria, and the cumulative duration of exposure would be insufficient to exceed cumulative sound exposure level (SEL) criteria. Even for high-frequency cetacean species (*e.g.*, harbor porpoises), which have the greatest sensitivity to potential TTS, individuals would have to make a very close approach and remain very close to the vessel

operating these sources in order to receive multiple exposures at relatively high levels as would be necessary to cause TTS. Intermittent exposures—as would occur due to the brief, transient signals produced by these sources—require a higher cumulative SEL to induce TTS than would continuous exposures of the same duration (*i.e.*, intermittent exposure results in lower levels of TTS). Moreover, most marine mammals would more likely avoid a loud sound source rather than swim in such close proximity as to result in TTS. Kremser *et al.* (2005) noted that the probability of a cetacean swimming through the area of exposure when a sub-bottom profiler emits a pulse is small—because if the animal was in the area, it would have to pass the transducer at close range in order to be subjected to sound levels that could cause TTS and would likely exhibit avoidance behavior to the area near the transducer rather than swim through at such a close range.

Behavioral disturbance to marine mammals from sound may include a variety of effects, including subtle changes in behavior (*e.g.*, minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.*, species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors. Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal.

In addition, sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.*, those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation). Masking occurs when the receipt of a sound is interfered

with by another coincident sound at similar frequencies and at similar or higher intensity, and may occur whether the sound is natural (*e.g.*, snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.*, shipping, sonar, seismic exploration) in origin. Marine mammal communications would not likely be masked appreciably by the acoustic signals given the directionality of the signals for the HRG survey equipment planned for use (Table 1-2 of AE's IHA application) and the brief period for when an individual mammal would likely be exposed.

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.*, crustaceans, cephalopods, fish, and zooplankton) (*i.e.*, effects to marine mammal habitat). Prey species exposed to sound might move away from the sound source, experience TTS, experience masking of biologically relevant sounds, or show no obvious direct effects. The most likely impacts (if any) for most prey species in a given area would be temporary avoidance of the area. Surveys using active acoustic sound sources move through an area, limiting exposure to multiple pulses. In all cases, sound levels would return to ambient once a survey ends and the noise source is shut down and, when exposure to sound ends, behavioral and/or physiological responses are expected to end relatively quickly. Finally, the HRG survey equipment will not have significant impacts to the seafloor and does not represent a source of pollution.

#### *Vessel Strike*

Vessel collisions with marine mammals, or ship strikes, can result in death or serious injury of the animal. These interactions are typically associated with large whales, which are less maneuverable than are smaller cetaceans or pinnipeds in relation to large vessels. Ship strikes generally involve commercial shipping vessels, which are normally larger and of which there is much more traffic in the ocean than geophysical survey vessels. Jensen and Silber (2004) summarized ship strikes of large whales worldwide from 1975-2003 and found that most collisions occurred in the open ocean and involved

large vessels (*e.g.*, commercial shipping). For vessels used in geophysical survey activities, vessel speed while towing gear is typically only 4-5 knots (2.1- 2.6 m/s). At these speeds, both the possibility of striking a marine mammal and the possibility of a strike resulting in serious injury or mortality are so low as to be discountable. At average transit speed for geophysical survey vessels, the probability of serious injury or mortality resulting from a strike is less than 50 percent. However, the likelihood of a strike actually happening is again low given the smaller size of these vessels and generally slower speeds. Notably in the Jensen and Silber study, no strike incidents were reported for geophysical survey vessels during that time period.

The potential effects of AE's specified survey activity are expected to be limited to Level B behavioral harassment. No permanent or temporary auditory effects or significant impacts to marine mammal habitat, including prey, are expected.

### **Estimated Take**

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of "small numbers," and the negligible impact determinations.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to sound produced by the sparker or boomer. Based on the characteristics of the signals produced

by the acoustic sources planned for use, Level A harassment is neither anticipated (even absent mitigation), nor proposed to be authorized. As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the proposed take numbers are estimated.

For acoustic impacts, generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

#### *Acoustic Thresholds*

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

*Level B Harassment* – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source or exposure context (*e.g.*, frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.*, bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.*, Southall *et al.*, 2007, 2021; Ellison *et al.*,



2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (RMS SPL) of 120 dB (referenced to 1 micropascal (re 1  $\mu$ Pa)) for continuous (e.g., vibratory pile-driving, drilling) and above RMS SPL 160 dB re 1  $\mu$ Pa for non-explosive impulsive (e.g., seismic airguns) or intermittent (e.g., scientific sonar) sources.

Generally speaking, Level B harassment take estimates based on these behavioral harassment thresholds are expected to include any likely takes by TTS as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (conspecific communication, predators, prey) may result in changes in behavior patterns that would not otherwise occur. AE's proposed activities include the use of impulsive (*i.e.*, boomer and sparker) sources, and therefore, the RMS SPL thresholds of 160 dB re 1  $\mu$ Pa is applicable.

*Level A harassment* – NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive).

The references, analysis, and methodology used in the development of the thresholds are described in NMFS' 2018 Technical Guidance, which may be accessed at:

AE's proposed activity includes the use of impulsive (*i.e.*, boomer and sparker) sources. However, as discussed above, NMFS has concluded that Level A harassment is not a reasonably likely outcome for marine mammals exposed to noise through use of the sources proposed for use here, and the potential for Level A harassment is not evaluated further in this document. Please see AE's application for details of a quantitative exposure analysis exercise, *i.e.*, calculated Level A harassment isopleths and estimated potential Level A harassment exposures. AE did not request authorization of take by Level A harassment, and no take by Level A harassment is proposed for authorization by NMFS.

#### *Ensonified Area*

Here, we describe operational and environmental parameters of the activity that are used in estimating the area ensonified above the acoustic thresholds, including source levels and transmission loss coefficient.

NMFS has developed a user-friendly methodology for estimating the extent of the Level B harassment isopleths associated with relevant HRG survey equipment (NMFS 2020). This methodology incorporates frequency and directionality (when relevant) to refine estimated ensonified zones. For acoustic sources that operate with different beamwidths, the maximum beamwidth was used, and the lowest frequency of the source was used when calculating the frequency-dependent absorption coefficient (Table 1). AE used 180-degree beamwidth in the calculation for the proposed sparker as is appropriate for an omnidirectional source.

NMFS considers the data provided by Crocker and Fratantonio (2016) to represent the best available information on source levels associated with HRG survey equipment and, therefore, recommends that source levels provided by Crocker and Fratantonio (2016) be incorporated in the method described above to estimate isopleth

distances to harassment thresholds. In cases where the source level for a specific type of HRG equipment is not provided in Crocker and Fratantonio (2016), NMFS recommends either the source levels provided by the manufacturer be used, or, in instances where source levels provided by the manufacturer are unavailable or unreliable, a proxy from Crocker and Fratantonio (2016) be used instead. Table 1 shows the HRG equipment type used during the planned surveys and the source levels associated with those HRG equipment types.

AE proposed to use the Dual Geo-Spark 2000X (400 tip/800 J). For all source configurations (Table 1), the maximum power expected to be discharged from the sparker source is 800 J. However, Crocker and Fratantonio (2016) did not measure the Dual Geo-Spark or a source with an energy of 800 J. A similar alternative system, the Applied Acoustics Dura-spark with a 400 tip, was measured by Crocker and Fratantonio (2016) with an input voltage of 500 – 2,000 J, and these measurements were used as a proxy for the Dual Geo-Spark. Table 1 shows the source parameters associated with this proxy. Using the measured source level of 203 dB RMS of the proxy, results of modeling indicated that the sparker would produce an estimated distance of 141 m to the Level B harassment isopleth.

AE additionally proposed to use the Geo-Boomer 300-500. Crocker and Fratantonio (2016) did not measure the Geo-Boomer 300-500. A similar alternative system, Applied Acoustics S-Boom, was measured by Crocker and Fratantonio (2016) and the 500 J values were used as a proxy for the Geo-Boomer 300-500. Using the measured source level of 202 dB RMS of the proxy, results of modeling indicated that the boomer would produce an estimated distance of 51 m to the Level B harassment isopleth.

Results of modeling using the methodology described above indicated that, of the HRG survey equipment proposed for use by the applicant that has the potential to result

in Level B harassment of marine mammals, the Dual Geo-Spark 2000X would produce the largest distance to the Level B harassment isopleth (141 m).

### *Marine Mammal Occurrence*

In this section, we provide information about the occurrence of marine mammals, including density or other relevant information, which will inform the take calculations.

Habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.*, 2016; (Roberts *et al.*, 2022) represent the best available information regarding marine mammal densities in the proposed survey area. These density data incorporate aerial and shipboard line-transect survey data from NMFS and other organizations and incorporate data from numerous physiographic and dynamic oceanographic and biological covariates, and controls for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.*, 2016). Most recently, in 2022, models for all taxa were updated. More information is available online at <https://seamap.env.duke.edu/models/Duke/EC/>. Marine mammal density estimates in the survey area (animals/km<sup>2</sup>) were obtained using the most recent model results for all taxa.

For the exposure analysis, density data from Roberts *et al.* (2022) were mapped using a geographic information system (GIS). For the survey area, the monthly densities of each species as reported by Roberts *et al.* (2022) were averaged by season; thus, a density was calculated for each species for spring, summer, fall, and winter. Density seasonal averages were calculated for both the Lease Area and the ECR Area for each species to assess the greatest average seasonal densities for each species. To be conservative since the exact timing for the survey during the year is uncertain, the greatest average seasonal density calculated for each species was carried forward in the exposure analysis, with exceptions noted later in this discussion. Estimated greatest

average seasonal densities (animals/km<sup>2</sup>) of marine mammal species that may be taken incidental to the planned survey can be found in Tables 6-1 and 6-2 of AE's IHA application. Below, we discuss how densities were assumed to apply to specific species for which the Roberts *et al.* (2022) models provide results at the genus or guild level.

There are two stocks of bottlenose dolphins that may be impacted by the surveys (Western North Atlantic Northern Migratory Coastal Stock (coastal stock) and the Western North Atlantic Offshore Stock (offshore stock)). However, Roberts *et al.* (2022) do not differentiate by stock. The Coastal Stock is assumed to generally occur in waters less than 20 m and the Offshore Stock in waters deeper than 20 m (65-ft) isobath.

The lease area is in waters deeper than 20 m and only the Offshore Stock would occur and could be potentially taken by survey effort in that area. For the ECR survey area, both stocks could occur in the area, so AE calculated separate mean seasonal densities for the portion to be surveyed that is less than 20 m in depth and for the portion that is greater than 20 m in depth to use for estimating take of the Coastal and Offshore Stocks of bottlenose dolphins, respectively. The total tracklines in waters deeper than 20 m, between the ECR and the lease area, are 20,305 km. The total tracklines in waters less than 20 m depth, only found in portions of the ECR, are 1,440 km. Therefore, different trackline totals were used to calculate take of the Coastal and Offshore Stocks of bottlenose dolphins (20,305 km trackline of Offshore Stock and 1,440 km trackline of the Coastal Stock). All other species analyzed used the total 21,745 km of trackline for calculations.

Furthermore, the Roberts *et al.* (2022) density model does not differentiate between the different pinniped species. For seals, given their size and behavior when in the water, seasonality, and feeding preferences, there is limited information available on species-specific distribution. Density estimates of Roberts *et al.* (2022) include all seal species that may occur in the Western North Atlantic combined (*i.e.*, harbor, gray,

hooded, and harp). For this IHA, only the harbor seals and gray seals are reasonably expected to occur in the survey area; densities of seals were split evenly between these two species.

Lastly, the Roberts *et al.* (2022) density model does not differentiate between the pilot whale species. While the exact latitudinal ranges of the two species are uncertain, only long-finned pilot whales are expected to occur in this project area due to their more northerly distribution and tolerance of shallower, colder shelf waters (Hayes *et al.*, 2022).

### *Take Estimation*

Here we describe how the information provided above is synthesized to produce a quantitative estimate of the take that is reasonably likely to occur and proposed for authorization.

In order to estimate the number of marine mammals predicted to be exposed to sound levels that would result in harassment, radial distances to predicted isopleths corresponding to Level B harassment thresholds are calculated, as described above. The maximum distance (*i.e.*, 141-m distance associated with the Dual Geo-Spark 2000X) to the Level B harassment criterion and the total length of the survey trackline are then used to calculate the total ensonified area, or zone of influence (ZOI) around the survey vessel.

AE proposes to conduct the survey, using either the boomer or sparker, for a total of 21,745 km of trackline, of which 14,025 km are in the Lease area and 7,720 km in the ECR area. Of the ECR survey trackline, 1,440 km are in waters less than 20 m depth. AE is requesting take based on the worst-case-scenario between the equipment proposed, which is the use of only the Dual Geo-Spark 2000X - based on the largest estimated distance to the harassment criterion. Based on the maximum estimated distance to the Level B harassment threshold of 141-m (sparker) and the total survey length, the total ensonified area is 6,133 km<sup>2</sup>. That is approximately 3,955 km<sup>2</sup> for the lease area and

2,177 km<sup>2</sup> in the ECR area with 407 km<sup>2</sup> in waters less than 20 m depth based on the following formula:

$$\text{Mobile Source ZOI} = (\text{Total survey length} \times 2r) + \pi r^2$$

Where total survey length is equal to the total distance of the survey track lines within the lease area; and r is equal to the maximum radial distance from a given sound source to the Level B harassment threshold.

This is a conservative estimate as it assumes the HRG source that results in the greatest isopleth distance to the Level B harassment threshold would be operated at all times during the entire survey, which may not ultimately occur and assumes the worst case scenario is the scenario chosen for the surveys. The number of marine mammals expected to be incidentally taken during the total survey is then calculated by estimating the number of each species predicted to occur within the ensonified area (animals/km<sup>2</sup>), incorporating the greatest seasonal estimated marine mammal densities as described above. The product is then rounded, to generate an estimate of the total number of instances of harassment expected for each species over the duration of the survey. A summary of this method is illustrated in the following formula with the resulting take of marine mammals shown below in Table 4:

$$\text{Estimated Take} = D \times \text{ZOI}$$

Where: *D* is the greatest average seasonal species density (per km<sup>2</sup>); and *ZOI* is the maximum daily ensonified area to relevant thresholds.

**Table 4 -- Estimated Take Numbers and Total Take Proposed for Authorization**

Species	Ensonified Area (km <sup>2</sup> )	Density (Animals/km <sup>2</sup> )	Estimated Take	Proposed Total Take Authorization	Percent of Abundance <sup>c</sup>
North Atlantic right whale	6,133	0.001932	12	12	3.51
Humpback whale	6,133	0.003853	24	24	1.69
Fin whale	6,133	0.006256	38	38	0.56
Sei whale	6,133	0.001972	12	12	0.19
Minke whale	6,133	0.029226	179	179	0.82

Sperm whale	6,133	0.000447	3	3	0.06
Risso's dolphin	6,133	0.003695	23	23	0.06
Long-finned pilot whale	6,133	0.003363	21	21	0.05
Atlantic white-sided dolphin	6,133	0.033740	207	207	0.22
Common dolphin	6,133	0.335271	2,056	2,056	1.19
Atlantic spotted dolphin	6,133	0.014496	89	89	0.22
Bottlenose dolphin (W.N. Atlantic Offshore) <sup>a</sup>	5,727	0.304831	1,746	1,746	2.78
Bottlenose dolphin (Northern Migratory Coastal) <sup>b</sup>	407	0.956430	389	389	5.86
Harbor porpoise	6,133	0.178544	1,095	1,095	1.15
Harbor seal	6,133	0.260186 <sup>d</sup>	1,596	1,596	2.60
Gray seal	6,133	0.260186 <sup>d</sup>	1,596	1,596	0.35 <sup>e</sup>

<sup>a</sup> The ensenified area for the offshore stock is for  $\geq 20$  m water depth includes all the lease area and portions of the ECR.

<sup>b</sup> The ensenified area for the migratory coastal stock is only the areas of  $< 20$  m water depth (found only in portions of the ECR).

<sup>c</sup> Based on the 2022 draft marine mammal stock assessment reports (SAR).

<sup>d</sup> These each represent 50% of a generic seal density value.

<sup>e</sup> This abundance estimate is based on the total stock abundance (including animals in Canada). The NMFS stock abundance estimate for US population is only 27,300.

## Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, and their habitat (50 CFR 216.104(a)(11)).



In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, NMFS considers two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, and impact on operations.

NMFS proposes that the following mitigation measures be implemented during AE's planned marine site characterization surveys. Pursuant to section 7 of the ESA, AE would also be required to adhere to relevant Project Design Criteria (PDC) of the NMFS' Greater Atlantic Regional Fisheries Office (GARFO) programmatic consultation (specifically PDCs 4, 5, and 7) regarding geophysical surveys along the U.S. Atlantic coast (<https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-take-reporting-programmatics-greater-atlantic#offshore-wind-site-assessment-and-site-characterization-activities-programmatic-consultation>).

#### *Visual Monitoring and Shutdown Zones*

AE must employ independent, dedicated, trained PSOs, meaning that the PSOs must (1) be employed by a third-party observer provider, (2) have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and (3) have successfully completed

an approved PSO training course appropriate for geophysical surveys. Visual monitoring must be performed by qualified, NMFS-approved PSOs. PSO resumes must be provided to NMFS for review and approval prior to the start of survey activities.

During survey operations (*e.g.*, any day on which use of the sparker or boomer sources is planned to occur, and whenever the sparker or boomer source is in the water, whether activated or not), a minimum of one visual marine mammal observer (PSO) must be on duty on each source vessel and conducting visual observations at all times during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset). A minimum of two PSOs must be on duty on each source vessel during nighttime hours. Visual monitoring must begin no less than 30 minutes prior to ramp-up (described below) and must continue until one hour after use of the sparker or boomer source ceases.

Visual PSOs shall coordinate to ensure 360° visual coverage around the vessel from the most appropriate observation posts and shall conduct visual observations using binoculars and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs shall establish and monitor applicable shutdown zones (see below). These zones shall be based upon the radial distance from the sparker or boomer source (rather than being based around the vessel itself).

Four shutdown zones are defined, depending on the species and context. An extended shutdown zone encompassing the area at and below the sea surface out to a radius of 500 m from the sparker or boomer source (0-500 m) is defined for NARW. For all other marine mammals, the shutdown zone encompasses a standard distance of 100 m (0-100 m) during the use of the sparker. For ESA-listed marine mammals during the use of the boomer, the shutdown zone is 100 m (0-100 m). For all non-ESA-listed marine mammals, the shutdown zone during the use of the boomer is 50 m (0-50 m). Any observations of marine mammals by crew members aboard any vessel associated with the survey shall be relayed to the PSO team.

Visual PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 1 hour between watches and may conduct a maximum of 12 hours of observation per 24-hour period.

#### *Pre-Start Clearance and Ramp-up Procedures*

A ramp-up procedure, involving a gradual increase in source level output, is required at all times as part of the activation of the sparker and boomer sources when technically feasible. Operators should ramp up sparker and boomer to half power for 5 minutes and then proceed to full power. A 30-minute pre-start clearance observation period of the shutdown zones must occur prior to the start of ramp-up. The intent of the pre-start clearance observation period (30 minutes) is to ensure no marine mammals are within the shutdown zones prior to the beginning of ramp-up. The intent of the ramp-up is to warn marine mammals of pending operations and to allow sufficient time for those animals to leave the immediate vicinity. All operators must adhere to the following pre-start clearance and ramp-up requirements:

- The operator must notify a designated PSO of the planned start of ramp-up as agreed upon with the lead PSO; the notification time should not be less than 60 minutes prior to the planned ramp-up in order to allow the PSOs time to monitor the shutdown zones for 30 minutes prior to the initiation of ramp-up (pre-start clearance). During this 30 minute pre-start clearance period the entire shutdown zone must be visible, except as indicated below.
- Ramp-ups shall be scheduled so as to minimize the time spent with the source activated.
- A visual PSO conducting pre-start clearance observations must be notified again immediately prior to initiating ramp-up procedures and the operator must receive confirmation from the PSO to proceed.

- Any PSO on duty has the authority to delay the start of survey operations if a marine mammal is detected within the applicable pre-start clearance zone.
- The operator must establish and maintain clear lines of communication directly between PSOs on duty and crew controlling the acoustic source to ensure that mitigation commands are conveyed swiftly while allowing PSOs to maintain watch.

The pre-start clearance requirement is waived for small delphinids and pinnipeds.

Detection of a small delphinid (individual belonging to the following genera of the Family Delphinidae: *Steno*, *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops*) or pinniped within the shutdown zone does not preclude beginning of ramp-up, unless the PSO confirms the individual to be of a genus other than those listed, in which case normal pre-clearance requirements apply.

If there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which the pre-clearance requirement is waived), PSOs may use best professional judgment in making the decision to call for a shutdown.

- Ramp-up may not be initiated if any marine mammal to which the pre-start clearance requirement applies is within the shutdown zone. If a marine mammal is observed within the shutdown zone during the 30-minute pre-start clearance period, ramp-up may not begin until the animal(s) has been observed exiting the zones or until an additional time period has elapsed with no further sightings (30 minutes for all baleen whale species and sperm whales and 15 minutes for all other species).
- PSOs must monitor the shutdown zones 30 minutes before and during ramp-up, and ramp-up must cease and the source must be shut down upon observation of a marine mammal within the applicable shutdown zone.

- Ramp-up may occur at times of poor visibility, including nighttime, if appropriate visual monitoring has occurred with no detections of marine mammals in the 30 minutes prior to beginning ramp-up. Sparker or boomer activation may only occur at night where operational planning cannot reasonably avoid such circumstances.

If the acoustic source is shut down for brief periods (*i.e.*, less than 30 minutes) for reasons other than implementation of prescribed mitigation (*e.g.*, mechanical difficulty), it may be activated again without ramp-up if PSOs have maintained constant visual observation and no detections of marine mammals have occurred within the applicable shutdown zone. For any longer shutdown, pre-start clearance observation and ramp-up are required.

#### *Shutdown Procedures*

All operators must adhere to the following shutdown requirements:

- Any PSO on duty has the authority to call for shutdown of the sparker or boomer source if a marine mammal is detected within the applicable shutdown zone.
- The operator must establish and maintain clear lines of communication directly between PSOs on duty and crew controlling the source to ensure that shutdown commands are conveyed swiftly while allowing PSOs to maintain watch.
- When the sparker or boomer source is active and a marine mammal appears within or enters the applicable shutdown zone, the source must be shut down. When shutdown is instructed by a PSO, the sparker or boomer source must be immediately deactivated and any dispute resolved only following deactivation.
- Four shutdown zones are defined, depending on the species and context. An extended shutdown zone encompassing the area at and below the sea surface out to a radius of 500 m from the sparker or boomer source (0-500 m) is defined for NARW. For all other marine mammals, the shutdown zone encompasses a standard distance of 100 m (0-100 m) during the use of the sparker. For ESA-

listed marine mammals during the use of the boomer, the shutdown zone is 100 m (0-100 m). For all non-ESA-listed marine mammals, the shutdown zone during use of the boomer is 50 m (0-50 m).

The shutdown requirement is waived for small delphinids and pinnipeds. If a small delphinid (individual belonging to the following genera of the Family Delphinidae: *Steno*, *Delphinus*, *Lagenorhynchus*, *Stenella*, and *Tursiops*) or pinniped is visually detected within the shutdown zone, no shutdown is required unless the PSO confirms the individual to be of a genus other than those listed, in which case a shutdown is required.

If there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived or one of the species with a larger shutdown zone), PSOs may use best professional judgment in making the decision to call for a shutdown.

Upon implementation of shutdown, the source may be reactivated after the marine mammal has been observed exiting the applicable shutdown zone or following a clearance period (30 minutes for all baleen whale species and sperm whales and 15 minutes for all other species) with no further detection of the marine mammal. If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the Level B harassment zone (141 m sparkers, 51 m boomers), shutdown must occur.

#### *Vessel Strike Avoidance*

Crew and supply vessel personnel must have access to and use an appropriate reference guide that includes identifying information on all marine mammals that may be encountered. Vessel operators must comply with the below measures except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question. These requirements do not apply in any case where

compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

Vessel operators and crews must maintain a vigilant watch for all marine mammals and slow down, stop their vessel(s), or alter course, as appropriate and regardless of vessel size, to avoid striking any marine mammals. A single marine mammal at the surface may indicate the presence of submerged animals in the vicinity of the vessel; therefore, precautionary measures should always be exercised. A visual observer aboard the vessel must monitor a vessel strike avoidance zone around the vessel (species-specific distances are detailed below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.*, PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to (1) distinguish marine mammal from other phenomena and (2) broadly to identify a marine mammal as a NARW, other whale (defined in this context as sperm whales or baleen whales other than NARWs), or other marine mammals.

All survey vessels, regardless of size, must observe a 10-knot (18.52 km/h) speed restriction in specific areas designated by NMFS for the protection of NARWs from vessel strikes. These include all Seasonal Management Areas (SMA) established under 50 CFR 224.105 (when in effect), any dynamic management areas (DMA) (when in effect), and Slow Zones. See [www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-ship-strikes-north-atlantic-right-whales](http://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-ship-strikes-north-atlantic-right-whales) for specific detail regarding these areas.

- All vessels must reduce speed to 10 knots (18.52 km/h) or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel.
- All vessels must maintain a minimum separation distance of 500 m from NARWs, baleen whales (except humpback and minke), sperm whales, and any

unidentified large whales. If a NARW, baleen whale (except humpback and minke), or an unidentified large whale is sighted within the relevant separation distance, the vessel must steer a course away at 10 kn (18.52 km/h) or less until the 500-m separation distance has been established. If a whale is observed but cannot be confirmed as a species other than a NARW, the vessel operator must assume that it is a NARW and take appropriate action.

- All vessels must maintain a minimum separation distance of 100 m from all humpback and minke whales.
- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel).
- When marine mammals are sighted while a vessel is underway, the vessel must take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area, reduce speed and shift the engine to neutral). This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

Members of the PSO team will consult NMFS NARW reporting system and Whale Alert, daily and as able, for the presence of NARWs throughout survey operations, and for the establishment of DMAs and/or Slow Zones. It is AE's responsibility to maintain awareness of the establishment and location of any such areas and to abide by these requirements accordingly.

#### *Seasonal Operating Requirements*

As described above, a section of the survey area partially overlaps with a portion of a NARW SMA off the port of New York/New Jersey. This SMA is active from



November 1 through April 30 of each year. The survey vessel, regardless of length, would be required to adhere to vessel speed restrictions (<10 knots (18.52 km/h)) when operating within the SMA during times when the SMA is active.

**Table 5 – North Atlantic Right Whale Dynamic Management Area (DMA) and Seasonal Management Area (SMA) Restrictions Within The Survey Areas**

Survey area	Species	DMA restrictions	Slow zones	SMA restrictions
Lease Area	North Atlantic right whale ( <i>Eubalaena glacialis</i> )	If established by NMFS, all of AE's vessel will abide by the described restrictions		N/A
ECR (within SMA)				November 1 through April 31 (Ports of New York/New Jersey)
ECR (outside SMA)				N/A
More information on Ship Strike Reduction for the NARW can be found at NMFS' website: <i><a href="https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales">https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales</a></i>				

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

### **Proposed Monitoring and Reporting**

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present while conducting the activities. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the activity; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and,
- Mitigation and monitoring effectiveness.

#### *Proposed Monitoring Measures*

Visual monitoring must be performed by qualified, NMFS-approved PSOs. AE must submit PSO resumes for NMFS review and approval prior to commencement of the survey. Resumes should include dates of training and any prior NMFS approval, as well as dates and description of last experience, and must be accompanied by information documenting successful completion of an acceptable training course.

For prospective PSOs not previously approved, or for PSOs whose approval is not current, NMFS must review and approve PSO qualifications. Resumes should include

information related to relevant education, experience, and training, including dates, duration, location, and description of prior PSO experience. Resumes must be accompanied by relevant documentation of successful completion of necessary training.

NMFS may approve PSOs as conditional or unconditional. A conditionally-approved PSO may be one who is trained but has not yet attained the requisite experience. An unconditionally-approved PSO is one who has attained the necessary experience. For unconditional approval, the PSO must have a minimum of 90 days at sea performing the role during a geophysical survey, with the conclusion of the most recent relevant experience not more than 18 months previous.

At least one of the visual PSOs aboard the vessel must be unconditionally-approved. One unconditionally-approved visual PSO shall be designated as the lead for the entire PSO team. This lead should typically be the PSO with the most experience, who would coordinate duty schedules and roles for the PSO team and serve as primary point of contact for the vessel operator. To the maximum extent practicable, the duty schedule shall be planned such that unconditionally-approved PSOs are on duty with conditionally-approved PSOs.

At least one PSO aboard each acoustic source vessel must have a minimum of 90 days at-sea experience working in the role, with no more than 18 months elapsed since the conclusion of the at-sea experience. One PSO with such experience must be designated as the lead for the entire PSO team and serve as the primary point of contact for the vessel operator. (Note that the responsibility of coordinating duty schedules and roles may instead be assigned to a shore-based, third-party monitoring coordinator.) To the maximum extent practicable, the lead PSO must devise the duty schedule such that experienced PSOs are on duty with those PSOs with appropriate training but who have not yet gained relevant experience.

PSOs must successfully complete relevant training, including completion of all required coursework and passing (80 percent or greater) a written and/or oral examination developed for the training program.

PSOs must have successfully attained a bachelor's degree from an accredited college or university with a major in one of the natural sciences, a minimum of 30 semester hours or equivalent in the biological sciences, and at least one undergraduate course in math or statistics. The educational requirements may be waived if the PSO has acquired the relevant skills through alternate experience. Requests for such a waiver shall be submitted to NMFS and must include written justification. Alternate experience that may be considered includes, but is not limited to (1) secondary education and/or experience comparable to PSO duties; (2) previous work experience conducting academic, commercial, or government-sponsored marine mammal surveys; and (3) previous work experience as a PSO (PSO must be in good standing and demonstrate good performance of PSO duties).

AE must work with the selected third-party PSO provider to ensure PSOs have all equipment (including backup equipment) needed to adequately perform necessary tasks, including accurate determination of distance and bearing to observed marine mammals, and to ensure that PSOs are capable of calibrating equipment as necessary for accurate distance estimates and species identification. Such equipment, at a minimum, shall include:

- At least one thermal (infrared) image device suited for the marine environment;
- Reticle binoculars (*e.g.*, 7 x 50) of appropriate quality (at least one per PSO, plus backups);
- Global Positioning Units (GPS) (at least one plus backups);

- Digital cameras with a telephoto lens that is at least 300-mm or equivalent on a full-frame single lens reflex (SLR) (at least one plus backups). The camera or lens should also have an image stabilization system;
- Equipment necessary for accurate measurement of distances to marine mammal;
- Compasses (at least one plus backups);
- Means of communication among vessel crew and PSOs; and,
- Any other tools deemed necessary to adequately and effectively perform PSO tasks.

The equipment specified above may be provided by an individual PSO, the third-party PSO provider, or the operator, but AE is responsible for ensuring PSOs have the proper equipment required to perform the duties specified in the IHA.

The PSOs will be responsible for monitoring the waters surrounding the survey vessel to the farthest extent permitted by sighting conditions, including Shutdown Zones, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established Shutdown Zones during survey activities. It will be the responsibility of the PSO(s) on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to Shutdown Zones. Reticulated binoculars must also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, appropriate night-vision devices (*e.g.*, night-vision goggles with thermal clip-ons and infrared technology) would be used. Position data would be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.*, daylight hours; Beaufort sea state (BSS) 3 or less), to the maximum extent practicable, PSOs must also conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the active acoustic sources and between acquisition periods, to the maximum extent practicable. Any observations of marine mammals by crew members aboard the vessel associated with the survey would be relayed to the PSO team. Data on all PSO observations would be recorded based on standard PSO collection requirements (see *Proposed Reporting Measures*). This would include dates, times, and locations of survey operations; dates and times of observations, location and weather; details of marine mammal sightings (*e.g.*, species, numbers, behavior); and details of any observed marine mammal behavior that occurs (*e.g.*, noted behavioral disturbances). Members of the PSO team shall consult the NMFS NARW reporting system and Whale Alert, daily and as able, for the presence of NARWs throughout survey operations.

#### *Proposed Reporting Measures*

AE shall submit a draft comprehensive report to NMFS on all activities and monitoring results within 90 days of the completion of the survey or expiration of the IHA, whichever comes sooner. The report must describe all activities conducted and sightings of marine mammals, must provide full documentation of methods, results, and interpretation pertaining to all monitoring, and must summarize the dates and locations of survey operations and all marine mammals sightings (dates, times, locations, activities, associated survey activities). The draft report shall also include geo-referenced, time-stamped vessel tracklines for all time periods during which acoustic sources were operating. Tracklines should include points recording any change in acoustic source status (*e.g.*, when the sources began operating, when they were turned off, or when they changed operational status such as from full array to single gun or vice versa). GIS files shall be provided in Environmental Systems Research Institute, Inc (ESRI) shapefile

format and include the Coordinated Universal Time (UTC) date and time, latitude in decimal degrees, and longitude in decimal degrees. All coordinates shall be referenced to the WGS84 geographic coordinate system. In addition to the report, all raw observational data shall be made available. The report must summarize the information. A final report must be submitted within 30 days following resolution of any comments on the draft report. All draft and final marine mammal monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov*, *nmfs.gar.incidental-take@noaa.gov*, and *ITP.lock@noaa.gov*.

PSOs must use standardized electronic data forms to record data. PSOs shall record detailed information about any implementation of mitigation requirements, including the distance of marine mammal to the acoustic source and description of specific actions that ensued, the behavior of the animal(s), any observed changes in behavior before and after implementation of mitigation, and if shutdown was implemented, the length of time before any subsequent ramp-up of the acoustic source. If required mitigation was not implemented, PSOs should record a description of the circumstances. At a minimum, the following information must be recorded:

1. Vessel names (source vessel), vessel size and type, maximum speed capability of vessel;
2. Dates of departures and returns to port with port name;
3. PSO names and affiliations;
4. Date and participants of PSO briefings;
5. Visual monitoring equipment used;
6. PSO location on vessel and height of observation location above water surface;
7. Dates and times (Greenwich Mean Time) of survey on/off effort and times corresponding with PSO on/off effort;

8. Vessel location (decimal degrees) when survey effort begins and ends and vessel location at beginning and end of visual PSO duty shifts;
9. Vessel location at 30-second intervals if obtainable from data collection software, otherwise at practical regular interval;
10. Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any change;
11. Water depth (if obtainable from data collection software);
12. Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including BSS and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon;
13. Factors that may contribute to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions); and
14. Survey activity information (and changes thereof), such as acoustic source power output while in operation, number and volume of airguns operating in an array, tow depth of an acoustic source, and any other notes of significance (*i.e.*, pre-start clearance, ramp-up, shutdown, testing, shooting, ramp-up completion, end of operations, streamers, *etc.*).
15. Upon visual observation of any marine mammal, the following information must be recorded:
  - a. Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
  - b. Vessel/survey activity at time of sighting (*e.g.*, deploying, recovering, testing, shooting, data acquisition, other);
  - c. PSO who sighted the animal;



- d. Time of sighting;
- e. Initial detection method;
- f. Sightings cue;
- g. Vessel location at time of sighting (decimal degrees);
- h. Direction of vessel's travel (compass direction);
- i. Speed of the vessel(s) from which the observation was made;
- j. Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level or unidentified); also note the composition of the group if there is a mix of species;
- k. Species reliability (an indicator of confidence in identification);
- l. Estimated distance to the animal and method of estimating distance;
- m. Estimated number of animals (high/low/best);
- n. Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, *etc.*);
- o. Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars, or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- p. Detailed behavior observations (*e.g.*, number of blows/breaths, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior before and after point of closest approach);
- q. Mitigation actions; description of any actions implemented in response to the sighting (*e.g.*, delays, shutdowns, ramp-up, speed or course alteration, *etc.*) and time and location of the action;
- r. Equipment operating during sighting;

- s. Animal's closest point of approach and/or closest distance from the center point of the acoustic source; and,
- t. Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up) and time and location of the action.

If a NARW is observed at any time by PSOs or personnel on the project vessel, during surveys or during vessel transit, AE must report the sighting information to the NMFS NARW Sighting Advisory System (866-755-6622) within 2 hours of occurrence, when practicable, or no later than 24 hours after occurrence. NARW sightings in any location may also be reported to the U.S. Coast Guard via channel 16 and through the WhaleAlert app (<http://www.whalealert.org>).

In the event that personnel involved in the survey activities discover an injured or dead marine mammal, the incident must be reported to NMFS as soon as feasible by phone (866-755-6622) and by email ([nmfs.gar.incidental-take@noaa.gov](mailto:nmfs.gar.incidental-take@noaa.gov) and [PR.ITP.MonitoringReports@noaa.gov](mailto:PR.ITP.MonitoringReports@noaa.gov)). The report must include the following information:

1. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
2. Species identification (if known) or description of the animal(s) involved;
3. Condition of the animal(s) (including carcass condition if the animal is dead);
4. Observed behaviors of the animal(s), if alive;
5. If available, photographs or video footage of the animal(s); and
6. General circumstances under which the animal was discovered.

In the event of a ship strike of a marine mammal by any vessel involved in the activities, AE must report the incident to NMFS by phone (866-755-6622) and by email

([nmfs.gar.incidental-take@noaa.gov](mailto:nmfs.gar.incidental-take@noaa.gov) and [PR.ITP.MonitoringReports@noaa.gov](mailto:PR.ITP.MonitoringReports@noaa.gov)) as soon

as feasible. The report would include the following information:

1. Time, date, and location (latitude/longitude) of the incident;
2. Species identification (if known) or description of the animal(s) involved;
3. Vessel's speed during and leading up to the incident;
4. Vessel's course/heading and what operations were being conducted (if applicable);
5. Status of all sound sources in use;
6. Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;
7. Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
8. Estimated size and length of animal that was struck;
9. Description of the behavior of the marine mammal immediately preceding and/or following the strike;
10. If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;
11. Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
12. To the extent practicable, photographs or video footage of the animal(s).

### **Negligible Impact Analysis and Determination**

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of

the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any impacts or responses (*e.g.*, intensity, duration), the context of any impacts or responses (*e.g.*, critical reproductive time or location, foraging impacts affecting energetics), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’ implementing regulations (54 FR 40338, September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, the majority of our analysis applies to all the species listed in Table 2, given that some of the anticipated effects of this project on different marine mammal stocks are expected to be relatively similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, they are included as separate subsections below. Specifically, we provide additional discussion related to NARW and to other species currently experiencing UMEs.

NMFS does not anticipate that serious injury or mortality would occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is proposed to be authorized. As discussed in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat** section, non-auditory physical effects, auditory physical effects, and vessel strike are not expected to occur. NMFS

expects that all potential takes would be in the form of Level B harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.*, Southall *et al.*, 2007; Ellison *et al.*, 2012).

In addition to being temporary, the maximum expected harassment zone around a survey vessel is 141-m. Therefore, the ensonified area surrounding each vessel is relatively small compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey species are mobile and are broadly distributed throughout the survey area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the planned survey area and there are no feeding areas known to be biologically important to marine mammals within the survey area. There is no designated critical habitat for any ESA-listed marine mammals in the survey area.

#### *North Atlantic Right Whales*

The status of the NARW population is of heightened concern and, therefore, merits additional analysis. As noted previously, elevated NARW mortalities began in June 2017 and there is an active UME. Overall, preliminary findings attribute human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of NARWs. As noted previously, the survey area overlaps a migratory corridor

BIA for NARWs that extends from Massachusetts to Florida and from the coast to beyond the shelf break. Due to the fact that the planned survey activities are temporary (will occur for up to 1 year) and the spatial extent of sound produced by the survey would be small relative to the spatial extent of the available migratory habitat in the BIA, NARW migration is not expected to be impacted by the survey. This important migratory area is approximately 269,488 km<sup>2</sup> in size (compared with the worst case scenario of approximately 6,133 km<sup>2</sup> of total estimated Level B harassment ensonified area associated with both the Lease Area and the ECR area surveys) and is comprised of the waters of the continental shelf offshore the East Coast of the United States, extending from Florida through Massachusetts.

Given the relatively small size of the ensonified area, it is unlikely that prey availability would be adversely affected by HRG survey operations. Required vessel strike avoidance measures will also decrease risk of ship strike during migration; no ship strike is expected to occur during AE's planned activities. Additionally, only very limited take by Level B harassment of NARWs has been requested and is being proposed for authorization by NMFS as HRG survey operations are required to maintain and implement a 500-m shutdown zone. The 500-m shutdown zone for NARWs is conservative, considering the Level B harassment isopleth for the most impactful acoustic source (*i.e.*, sparker) is estimated to be 141-m, and thereby minimizes the intensity and duration of any potential incidents of behavioral harassment for this species. As noted previously, Level A harassment is not expected due to the small estimated zones in conjunction with the aforementioned shutdown requirements. NMFS does not anticipate NARWs takes that would result from AE's proposed activities would impact annual rates of recruitment or survival. Thus, any takes that occur would not result in population level impacts.

*Other Marine Mammal Species with Active UMEs*

As noted previously, there are several active UMEs occurring in the vicinity of AE's survey area. Elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida since January 2016. Of the cases examined, approximately half had evidence of human interaction (ship strike or entanglement). The UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of humpback whales (the West Indies breeding population, or DPS) remains stable at approximately 12,000 individuals.

Beginning in January 2017, elevated minke whale strandings have occurred along the Atlantic coast from Maine through South Carolina, with highest numbers in Massachusetts, Maine, and New York. This event does not provide cause for concern regarding population level impacts, as the likely population abundance is greater than 20,000 whales.

Elevated numbers of harbor seal and gray seal mortalities were first observed between 2018-2020 and, as part of a separate UME, again in 2022. These have occurred across Maine, New Hampshire, and Massachusetts. Based on tests conducted so far, the main pathogen found in the seals is phocine distemper virus (2018-2020) and avian influenza (2022), although additional testing to identify other factors that may be involved in the UMEs is underway. The UMEs do not provide cause for concern regarding population-level impacts to any of these stocks. For harbor seals, the population abundance is over 60,000 and annual M/SI (339) is well below PBR (1,729) (Hayes *et al.*, 2023). The population abundance for gray seals in the United States is over 27,000, with an estimated abundance, including seals in Canada, of approximately 450,000. In addition, the abundance of gray seals is likely increasing in the U.S. Atlantic as well as in Canada (Hayes *et al.*, 2021; Hayes *et al.*, 2023).

The required mitigation measures are expected to reduce the number and/or severity of takes for all species listed in Table 2, including those with active UMEs, to the

level of least practicable adverse impact. In particular, they would provide animals the opportunity to move away from the sound source before HRG survey equipment reaches full energy, thus preventing them from being exposed to sound levels that have the potential to cause injury. No Level A harassment is anticipated, even in the absence of mitigation measures, or proposed for authorization.

NMFS expects that takes would be in the form of short-term Level B harassment by way of brief startling reactions and/or temporary vacating of the area, or decreased foraging (if such activity was occurring)—reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals would only be exposed briefly to a small ensonified area that might result in take. Additionally, required mitigation measures would further reduce exposure to sound that could result in more severe behavioral harassment.

In summary and as described above, the following factors primarily support our preliminary determination that the impacts resulting from this activity are not expected to adversely affect any of the species or stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or proposed to be authorized;
- No Level A harassment (PTS) is anticipated, even in the absence of mitigation measures, or proposed to be authorized;
- Foraging success is not likely to be significantly impacted as effects on species that serve as prey species for marine mammals from the survey are expected to be minimal;
- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the ensonified areas during the planned survey to avoid exposure to sounds from the activity;



- Take is anticipated to be by Level B harassment only consisting of brief startling reactions and/or temporary avoidance of the ensonified area;
- Survey activities would occur in such a comparatively small portion of the BIA for the NARW migration that any avoidance of the area due to survey activities would not affect migration. In addition, mitigation measures require shutdown at 500 m (almost four times the size of the Level B harassment zone of 141 m) to minimize the effects of any Level B harassment take of the species; and,
- The proposed mitigation measures, including visual monitoring and shutdowns, are expected to minimize potential impacts to marine mammals.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

### **Small Numbers**

As noted previously, only take of small numbers of marine mammals may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one-third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

NMFS proposes to authorize incidental take by Level B harassment only of 15 marine mammal species with 16 managed stocks. The total amount of takes proposed for authorization is less than 6 percent relative to the best available population abundance for any of the 16 managed stocks (highest being for the Western North Atlantic Migratory Coastal Stock of Bottlenose dolphins) (Table 4). The take numbers proposed for authorization are considered conservative estimates for purposes of the small numbers determination as they assume all takes represent different individual animals, which is unlikely to be the case.

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals would be taken relative to the population size of the affected species or stocks.

#### **Unmitigable Adverse Impact Analysis and Determination**

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

#### **Endangered Species Act**

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species.

NMFS Office of Protected Resources (OPR) is proposing to authorize take of four species of marine mammals which are listed under the ESA, including the North Atlantic

right, fin, sei, and sperm whale, and has determined that these activities fall within the scope of activities analyzed in NMFS Greater Atlantic Regional Fisheries Office's (GARFO) programmatic consultation regarding geophysical surveys along the U.S. Atlantic coast in the three Atlantic Renewable Energy Regions (completed June 29, 2021; revised September 2021).

### **Proposed Authorization**

As a result of these preliminary determinations, NMFS proposes to issue an IHA to AE for conducting marine site characterization surveys in coastal waters off of New York and New Jersey in the New York Bight for a period of 1 year, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at:

*<https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable>*

### **Request for Public Comments**

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA. We also request comment on the potential renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, 1-year renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical activities as described in the **Description of Proposed Activity** section of this notice is planned or (2) the activities as described in the **Description of Proposed Activity** section of this notice would not be completed by the time the IHA expires and a renewal would allow for completion of the

activities beyond that described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed renewal IHA effective date (recognizing that the renewal IHA expiration date cannot extend beyond 1 year from expiration of the initial IHA).

- The request for renewal must include the following:

- (1) An explanation that the activities to be conducted under the requested renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take).

- (2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: April 18, 2023.

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Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.